



SEQUENCE LISTING

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HOOD, ELIZABETH
JILKA, JOSEPH

<120> COMMERCIAL PRODUCTION OF LACCASE IN PLANTS

<130> 10015

<140> 09/786,960

<141> 2001-03-12

<150> 60/103,301

<151> 1998-10-05

<160> 3

<170> PatentIn Ver. 2.1

<210> 1

<211> 1500

<212> DNA

<213> Trametes versicolor

<220>

<221> CDS

<222> (1)..(1497)

<400> 1

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| 1 5 10 15 | |
| ccc gac ggc ttc ctt cgg gat gcc atc gtg gtc aac ggc gtg gtc cct | 96 |
| Pro Asp Gly Phe Leu Arg Asp Ala Ile Val Val Asn Gly Val Val Pro | |
| 20 25 30 | |
| tcc ccg ctc atc acc ggg aag aag gga gac cgc ttc cag ctc aac gtc | 144 |
| Ser Pro Leu Ile Thr Gly Lys Lys Gly Asp Arg Phe Gln Leu Asn Val | |
| 35 40 45 | |
| gtc gac acc ttg acc aac cac agc atg ctc aag tcc act agt atc cac | 192 |
| Val Asp Thr Leu Thr Asn His Ser Met Leu Lys Ser Thr Ser Ile His | |
| 50 55 60 | |
| tgg cac ggc ttc ttc cag gca ggc acc aac tgg gca gac gga ccc gcg | 240 |
| Trp His Gly Phe Phe Gln Ala Gly Thr Asn Trp Ala Asp Gly Pro Ala | |
| 65 70 75 80 | |
| ttc gtc aac cag tgc cct att gct tcc ggg cat tca ttt ctg tac gac | 288 |
| Phe Val Asn Gln Cys Pro Ile Ala Ser Gly His Ser Phe Leu Tyr Asp | |
| 85 90 95 | |
| ttc cat gtg ccc gac cag gca gga acg ttc tgg tac cac agt cat ctg | 336 |
| Phe His Val Pro Asp Gln Ala Gly Thr Phe Trp Tyr His Ser His Leu | |
| 100 105 110 | |

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TECH CENTER 1600/2900

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| tct acg caa tac tgt gac ggg ctg cga gga ccg ttc gtc gtg tac gac | 384 |
| Ser Thr Gln Tyr Cys Asp Gly Leu Arg Gly Pro Phe Val Val Tyr Asp | |
| 115 120 125 | |
| ccc aag gat ccg cac gcc agc cgc tac gat gtt gac aac gag agc acg | 432 |
| Pro Lys Asp Pro His Ala Ser Arg Tyr Asp Val Asp Asn Glu Ser Thr | |
| 130 135 140 | |
| gtc atc acg ttg acc gac tgg tac cac acc gct gcc cgg ctc ggt ccc | 480 |
| Val Ile Thr Leu Thr Asp Trp Tyr His Thr Ala Ala Arg Leu Gly Pro | |
| 145 150 155 160 | |
| agg ttc cca ctc ggc gcg gac gcc acg ctc atc aat ggt ctt ggg cgg | 528 |
| Arg Phe Pro Leu Gly Ala Asp Ala Thr Leu Ile Asn Gly Leu Gly Arg | |
| 165 170 175 | |
| tcg gcc tcc act ccc acc gcc gcg ctt gct gtg atc aac gtc cag cac | 576 |
| Ser Ala Ser Thr Pro Thr Ala Ala Leu Ala Val Ile Asn Val Gln His | |
| 180 185 190 | |
| gga aag cgc tac cgc ttc cgt ctc gtt tcg atc tcg tgc gac ccg aac | 624 |
| Gly Lys Arg Tyr Arg Phe Arg Leu Val Ser Ile Ser Cys Asp Pro Asn | |
| 195 200 205 | |
| tac acg ttc agc atc gac ggg cac aat ctg acc gtc atc gag gtc gac | 672 |
| Tyr Thr Phe Ser Ile Asp Gly His Asn Leu Thr Val Ile Glu Val Asp | |
| 210 215 220 | |
| ggg atc aac agc cag cct ctc ctt gtc gac tct atc cag atc ttc gcc | 720 |
| Gly Ile Asn Ser Gln Pro Leu Leu Val Asp Ser Ile Gln Ile Phe Ala | |
| 225 230 235 240 | |
| gcg cag cgc tac tcc ttt gtg ttg aat gcg aac caa acg gtc ggc aac | 768 |
| Ala Gln Arg Tyr Ser Phe Val Leu Asn Ala Asn Gln Thr Val Gly Asn | |
| 245 250 255 | |
| tac tgg gtc cgc gcg aac ccg aac ttc gga acg gtt ggg ttc gcc ggg | 816 |
| Tyr Trp Val Arg Ala Asn Pro Asn Phe Gly Thr Val Gly Phe Ala Gly | |
| 260 265 270 | |
| ggg atc aac tcc gcc atc ctg cgc tac caa ggc gca cca gtc gcc gag | 864 |
| Gly Ile Asn Ser Ala Ile Leu Arg Tyr Gln Gly Ala Pro Val Ala Glu | |
| 275 280 285 | |
| ccc act acg acc cag acg acg tcg gtg atc ccg ctt atc gag acg aac | 912 |
| Pro Thr Thr Thr Gln Thr Thr Ser Val Ile Pro Leu Ile Glu Thr Asn | |
| 290 295 300 | |
| ttg cac ccc ctc gct cgc atg cct gtg cct ggc agc ccg aca ccc ggg | 960 |
| Leu His Pro Leu Ala Arg Met Pro Val Pro Gly Ser Pro Thr Pro Gly | |
| 305 310 315 320 | |
| ggc gtc gac aag gcg ctc aac ctc gcg ttt aac ttc aac ggc acc aac | 1008 |
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| 325 330 335 | |

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| Phe Phe Ile Asn Asn Ala Thr Phe Thr Pro Pro Thr Val Pro Val Leu | |
| 340 345 350 | |
| ctc cag att ctg agc ggt gcg cag acc gca caa gac ctg ctc cct gca | 1104 |
| Leu Gln Ile Leu Ser Gly Ala Gln Thr Ala Gln Asp Leu Leu Pro Ala | |
| 355 360 365 | |
| ggc tct gtc tac ccg ctc ccg gcc cac tcc acc atc gag atc acg ctg | 1152 |
| Gly Ser Val Tyr Pro Leu Pro Ala His Ser Thr Ile Glu Ile Thr Leu | |
| 370 375 380 | |
| ccc gcg acc gcc ttg gcc ccg ggt gca ccg cac ccc ttc cac ctg cac | 1200 |
| Pro Ala Thr Ala Leu Ala Pro Gly Ala Pro His Pro Phe His Leu His | |
| 385 390 395 400 | |
| ggc cac gcc ttc gcg gtc gtt cgc agc gcg ggg agc acc acg tat aac | 1248 |
| Gly His Ala Phe Ala Val Val Arg Ser Ala Gly Ser Thr Thr Tyr Asn | |
| 405 410 415 | |
| tac aac gac ccg atc ttc cgc gac gtc gtg agc acg ggc acg ccc gcc | 1296 |
| Tyr Asn Asp Pro Ile Phe Arg Asp Val Val Ser Thr Gly Thr Pro Ala | |
| 420 425 430 | |
| gcg ggc gac aac gtc acg atc cgc ttc cag acg gac aac ccc ggg ccg | 1344 |
| Ala Gly Asp Asn Val Thr Ile Arg Phe Gln Thr Asp Asn Pro Gly Pro | |
| 435 440 445 | |
| tgg ttc ctc cac tgc cac atc gac ttc cac ctc gac gcg ggc ttc gcg | 1392 |
| Trp Phe Leu His Cys His Ile Asp Phe His Leu Asp Ala Gly Phe Ala | |
| 450 455 460 | |
| atc gtg ttc gca gag gac gtt gcg gac gtg aag gcg gcg aac ccg gtt | 1440 |
| Ile Val Phe Ala Glu Asp Val Ala Asp Val Lys Ala Ala Asn Pro Val | |
| 465 470 475 480 | |
| ccg aag gcg tgg tgc gac ctg tgc ccg atc tac gac ggg ctg agc gag | 1488 |
| Pro Lys Ala Trp Ser Asp Leu Cys Pro Ile Tyr Asp Gly Leu Ser Glu | |
| 485 490 495 | |
| gct aac cag tga | 1500 |
| Ala Asn Gln | |

<210> 2

<211> 499

<212> PRT

<213> Trametes versicolor

<400> 2

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| Pro Asp Gly Phe Leu Arg Asp Ala Ile Val Val Asn Gly Val Val Pro |
| 20 25 30 |

| |
|---|
| Ser Pro Leu Ile Thr Gly Lys Lys Gly Asp Arg Phe Gln Leu Asn Val |
| 35 40 45 |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Asp | Thr | Leu | Thr | Asn | His | Ser | Met | Leu | Lys | Ser | Thr | Ser | Ile | His | 50 | 55 | 60 |
| Trp | His | Gly | Phe | Phe | Gln | Ala | Gly | Thr | Asn | Trp | Ala | Asp | Gly | Pro | Ala | 65 | 70 | 75 |
| Phe | Val | Asn | Gln | Cys | Pro | Ile | Ala | Ser | Gly | His | Ser | Phe | Leu | Tyr | Asp | 85 | 90 | 95 |
| Phe | His | Val | Pro | Asp | Gln | Ala | Gly | Thr | Phe | Trp | Tyr | His | Ser | His | Leu | 100 | 105 | 110 |
| Ser | Thr | Gln | Tyr | Cys | Asp | Gly | Leu | Arg | Gly | Pro | Phe | Val | Val | Tyr | Asp | 115 | 120 | 125 |
| Pro | Lys | Asp | Pro | His | Ala | Ser | Arg | Tyr | Asp | Val | Asp | Asn | Glu | Ser | Thr | 130 | 135 | 140 |
| Val | Ile | Thr | Leu | Thr | Asp | Trp | Tyr | His | Thr | Ala | Ala | Arg | Leu | Gly | Pro | 145 | 150 | 155 |
| Arg | Phe | Pro | Leu | Gly | Ala | Asp | Ala | Thr | Leu | Ile | Asn | Gly | Leu | Gly | Arg | 165 | 170 | 175 |
| Ser | Ala | Ser | Thr | Pro | Thr | Ala | Ala | Leu | Ala | Val | Ile | Asn | Val | Gln | His | 180 | 185 | 190 |
| Gly | Lys | Arg | Tyr | Arg | Phe | Arg | Leu | Val | Ser | Ile | Ser | Cys | Asp | Pro | Asn | 195 | 200 | 205 |
| Tyr | Thr | Phe | Ser | Ile | Asp | Gly | His | Asn | Leu | Thr | Val | Ile | Glu | Val | Asp | 210 | 215 | 220 |
| Gly | Ile | Asn | Ser | Gln | Pro | Leu | Leu | Val | Asp | Ser | Ile | Gln | Ile | Phe | Ala | 225 | 230 | 235 |
| Ala | Gln | Arg | Tyr | Ser | Phe | Val | Leu | Asn | Ala | Asn | Gln | Thr | Val | Gly | Asn | 245 | 250 | 255 |
| Tyr | Trp | Val | Arg | Ala | Asn | Pro | Asn | Phe | Gly | Thr | Val | Gly | Phe | Ala | Gly | 260 | 265 | 270 |
| Gly | Ile | Asn | Ser | Ala | Ile | Leu | Arg | Tyr | Gln | Gly | Ala | Pro | Val | Ala | Glu | 275 | 280 | 285 |
| Pro | Thr | Thr | Thr | Gln | Thr | Thr | Ser | Val | Ile | Pro | Leu | Ile | Glu | Thr | Asn | 290 | 295 | 300 |
| Leu | His | Pro | Leu | Ala | Arg | Met | Pro | Val | Pro | Gly | Ser | Pro | Thr | Pro | Gly | 305 | 310 | 315 |
| Gly | Val | Asp | Lys | Ala | Leu | Asn | Leu | Ala | Phe | Asn | Phe | Asn | Gly | Thr | Asn | 325 | 330 | 335 |
| Phe | Phe | Ile | Asn | Asn | Ala | Thr | Phe | Thr | Pro | Pro | Thr | Val | Pro | Val | Leu | 340 | 345 | 350 |

Leu Gln Ile Leu Ser Gly Ala Gln Thr Ala Gln Asp Leu Leu Pro Ala
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Gly Ser Val Tyr Pro Leu Pro Ala His Ser Thr Ile Glu Ile Thr Leu
370 375 380

Pro Ala Thr Ala Leu Ala Pro Gly Ala Pro His Pro Phe His Leu His
385 390 395 400

Gly His Ala Phe Ala Val Val Arg Ser Ala Gly Ser Thr Thr Tyr Asn
405 410 415

Tyr Asn Asp Pro Ile Phe Arg Asp Val Val Ser Thr Gly Thr Pro Ala
420 425 430

Ala Gly Asp Asn Val Thr Ile Arg Phe Gln Thr Asp Asn Pro Gly Pro
435 440 445

Trp Phe Leu His Cys His Ile Asp Phe His Leu Asp Ala Gly Phe Ala
450 455 460

Ile Val Phe Ala Glu Asp Val Ala Asp Val Lys Ala Ala Asn Pro Val
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Pro Lys Ala Trp Ser Asp Leu Cys Pro Ile Tyr Asp Gly Leu Ser Glu
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Ala Asn Gln

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<211> 1401

<212> DNA

<213> Zea mays

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<223> Globulin-1 promoter

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acaattacat atttacaaaa atgttttcta taaatattag atttagttcg tttatttgaa 180
tttcttcgga aaattcacat ttaaactgca agtcactcga aacatggaaa accgtgcatg 240
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catatataga ggttgtgata aaaatttgat aatgtttcgg taaagttgtg acgtactatg 480
tgtagaaacc taagtgcct acacataaaa tcatagagtt tcaatgtagt tcaactcgaca 540

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